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THE METAPHYSICAL x IN COGNITION.

THE FAUST ATTITUDE IN PHILOSOPHY.

FAUST had studied all the sciences, had taken degrees in the four faculties, and become a famous professor in the university. Yet in the monologue with which Goethe opens his grand drama, he stands before us a self-confessed ignoramus, whose lectures are a mere waste of time, since he does not teach things worth knowing, and whose despair reaches its climax in the proclamation of the dreary doctrine that knowledge is impossible. He says :

“I’ve studied now Philosophy
And Jurisprudence, Medicine,—
And even, alas ! Theology,—
From end to end, with labor keen ;
And here, poor fool ! with all my lore
I stand, no wiser than before :
I’m Magister—yea, Doctor—hight,
And straight or cross-wise, wrong or right,
These ten years long, with many woes,
I’ve led my scholars by the nose,—
And see, that nothing can be known !”

Goethe’s magnificent drama has exercised upon the minds of all civilised nations an influence scarcely less than that of the Bible ; and here we are confronted with a statement of the impossibility of scientific research. But if science is vain, what shall we do ? Are we not like miners in search of useful and precious metals, groping our way in the dark labyrinth of excavations underground, with the assistance of the lamp of scientific method ? If science after all is but vanity, had we not better extinguish our lamp and abandon ourselves to the mercy of circumstances ?

The Faust attitude is apt to exercise a baneful influence upon youthful minds who accustom themselves to finding the acme of wisdom in the conclusion that cognition is an unprofitable sport, knowledge vain, and science the empty conceit of a deluded brain.

Faust's words are often quoted in order to give the prestige of Goethe's authority to the agnostic doctrine; but let us bear in mind that we must explain the words of the passage from its context; they contain the exposition of the dramatic plot, embodying Faust's fundamental error from which all his later mistakes arise. Far from being endorsed by Goethe, they are proposed for refutation, and Mephistopheles, behind Faust's back, triumphantly says:

"If thou despisest reason and science, which can
Alone afford the noblest power to man,
Thou wilt be mine beyond recall."

[*"Verachte nur Vernunft und Wissenschaft,
Der Menschen allerhöchste Kraft,
Und du bist mein schon ganz gewiss!"*]

The surrender of science is the way to perdition.

Faust began his studies from the top, not from the bottom. He began with philosophy, and we may well assume that the philosophy he studied consisted of that metaphysical verbiage which regards knowledge as a comprehension of things-in-themselves. Faust apparently imagines that so long as we do not know what things-in-themselves are, all our knowledge remains purely phenomenal and worthless. No wonder that he is desperate, for as he states himself, he "rummages in empty words."

According to the metaphysical method of philosophising we know of gold that it is yellowish or reddish, that it is heavier than other metals, possessing in its pure state a certain specific weight, that it does not corrode, is ductile or malleable, etc.; but all our chemical knowledge avails us nothing unless we understand what the essence of gold is.¹ Phenomenal knowledge apparently touches

¹ John Locke, one of the soberest philosophers, says: As "it is plain that the word 'gold' stands in the place of a substance, having the real essence of a species of things made by nature," our notion that gold is something fixed, "is a truth

only the surface of existence, and we are told that what we need is metaphysical knowledge; but metaphysical knowledge can be as little obtained as the blue flower of Wonderland in the hopeless quest of which the knights-errant of yore were busily engaged.

The fatal error of metaphysics is the reification or hypostatization and substantiation of names. Gold is supposed to be an essence which is in possession of many properties. The properties are knowable, but the essence itself remains unknown. The error is obvious enough: the properties of gold are, in truth, qualities; gold is the sum-total of all its qualities, and we know what gold is, as soon as we know all the qualities of gold.

While metaphysicians mystified themselves and others with things-in-themselves and with the idea of metaphysical knowledge, the investigators in the various branches of science, nothing daunted, continued in their search for truth, and it became an established doctrine of the day that science and philosophy were diametrically opposed. The philosopher looked down upon the scientist, whom he ridiculed for imagining himself in possession of a parcel of truth, while in fact his knowledge was a mere illusion. The scientist on the other hand smiled at the ingenuous pride of the philosopher whose grandiloquent phrases were either the vagaries of dreamers or trivial truisms concealed in the garb of pompous declamations. Some scientists tried to keep in contact with metaphysics, but others cut themselves loose from it, and Kirchhoff, in order to avoid the mysticism into which the metaphysical conception of knowledge is liable to involve a thinker, replaced the term "knowledge" by "description," declaring that the object of mechanics is to *describe* with exhaustive thoroughness and the greatest attainable simplicity the motions that take place in nature. Professor Mach, born of the same spirit of modern science, independently of Kirchhoff, spoke of

which will always fail us in its particular application, and so is of no real use or certainty. . . . For if we know not the real essence of gold, it is impossible we should know what parcel of matter has that essence, and so whether it be true gold or no." —*An Essay Concerning Human Understanding*, III, vi, 50.

Among the philosophers of the eighteenth century Bishop Berkeley (commonly, and, even by Kant, erroneously regarded as a denier of reality) is the only one who reached the proper conclusion that substance does not exist.

cognition as an imitation or a mental construction of facts—*ein Nachbilden der Thatsachen*.¹

After science and philosophy had separated, science began to split up into innumerable specialities, and philosophy lost itself more and more in the labyrinthian woods of metaphysics. The consequence was that the need of a reconciliation was strongly felt, and approaches were made from both sides to reach an amicable *status quo*, in order to keep philosophy sound and to preserve the solidarity of all knowledge in the sciences through the establishment of a philosophy of science.

Schopenhauer made an attempt at reconciling metaphysics with the sciences, and he was in many respects very helpful in preparing the way for the positivism of a Philosophy of Science. Nevertheless, he is still a metaphysician and takes his metaphysics seriously, for in the realm of his things-in-themselves nothing is impossible. The "will" is above space and time and can freely choose its own way of acting. Schopenhauer repudiates spiritism, but speaks about spirits, telepathy, clairvoyance, dreams and the dream-organ, the seat of which he believes to have discovered in the sympathetic system (!) in such a way that any medium should be delighted to quote from him. Schopenhauer's reconciliation of metaphysics and science consists in the proposition of a duality of cognition. There is, according to his philosophy, physical knowledge and metaphysical knowledge; the former is accessible to science, but not the latter. Schopenhauer says (*W. a. W. u. V.*, I, pp. 114–117):²

"If we turn to the wide province of natural science, which is divided into many fields, we may, in the first place, make a general division of it into two parts. It is either the description of forms, which I call *morphology*, or the explanation of changes, which I call *atiology*. The first treats of the permanent forms, the second

¹ See Professor Mach's great work, *The Science of Mechanics*, his *Monist* articles, *passim*, and especially his "Address Delivered Before the General Session of the German Association of Naturalists and Physicians, at Vienna, September 24, 1894," published in *The Open Court*, Nos. 376 and 377, and in his *Popular Scientific Lectures*.

² The quotations refer to the pages of the German edition. The English translation by Haldane and Kemp is full of errors and cannot be used without constant reference to the original.

of the changing matter, according to the laws of its transition from one form to another. . . .

"If, however, we surrender ourselves to its teaching, we soon become convinced that ætiology cannot afford us the information we chiefly desire, any more than morphology. . . . It determines, according to law, the order in which the phenomena originate in time and space. But it affords us absolutely no information about the inner nature of any one of these phenomena: this is called *Naturkraft* or power of nature, and it lies outside the province of causal explanation. The constant uniformity with which manifestations of nature appear whenever their known conditions are present, is called a *law of nature*. But this law of nature, these conditions, and the real nature of a phenomenon, in a particular place and at a particular time, are all that ætiology knows or even can know. The power of nature itself which manifests itself, the inner nature of the phenomena which appear in accordance with these laws, remains always a secret to it, something entirely strange and unknown in the case of the simplest as well as of the most complex phenomena. For although as yet ætiology has most completely achieved its aim in mechanics, and least completely in physiology, still the force on account of which a stone falls to the ground or one body repels another is, in its inner nature, not less strange and mysterious than that which produces the movements and the growth of an animal. . . . Consequently the most complete ætiological explanation of the whole of nature can never be more than an enumeration of forces which cannot be explained, and a reliable statement of the rule according to which phenomena appear in time and space, succeed, and make way for each other. But the inner nature of the forces remains unexplained, because the law which our explanation follows does not extend so far; it is limited to their appearance and succession. In this respect it may be compared to a section of a piece of marble which shows many veins beside each other, but does not allow us to trace the course of veins from the interior of the marble to its surface. Or, if I may use a humorous but more striking comparison, the philosophical investigator, when confronted with the entire ætiology of nature, must always feel like a man who, without knowing how, has dropped into a company quite unknown to him, each member of which in turn presents another to him as his friend and cousin, and therefore as quite well known, yet the man himself, while at each introduction he expresses himself gratified, has always the question on his lips: 'But how the deuce am I going to get at the whole company?'"

Schopenhauer forgets his own solution of the metaphysical problem. The forces of nature which in their innermost essence appear to us as inaccessible, are nearer to us than we imagine and we know them better and more intimately than anything else, for our own soul is the metaphysical essence of our bodily being and the company of strangers who introduce themselves as their brothers

and cousins are not only akin to one another, but also to our own existence. The gravity of the falling stone, the heat of the sun, electricity, magnetism, and all other energies are the cousins of our own vitality. They are life of our life, and our organism is but a transformation of these supposed strangers. We hold the key to Nature's secrets in our possession, for our own being is an immediate and most direct revelation of her metaphysical interior.

As to the first comparison of scientific knowledge to the inspection of the surface of a piece of marble, we must add here that Schopenhauer retracts his own view in the *Nachlass*, where he says (page 306):

"By the grain of the surface I cognise the whole marble without being obliged to follow the veins into the interior. The cross-section shows the same condition all through."

In another place *W. a. W. u. V.*, II, p. 190, Schopenhauer discusses the same problem of the relation of physics to metaphysics. He says :

"We find *physics* (in the widest sense of the word) also occupied with the explanation of the phenomena in the world. But it lies in the very nature of its explanations themselves that they cannot be sufficient. Physics cannot stand on its own feet, but requires a metaphysics to lean upon, whatever airs it may give itself towards the latter. For it explains the phenomena by something still more unknown than they are themselves; by laws of nature, resting upon forces of nature, to which vitality also belongs. . . .

"The physical explanation in general and as such requires further a *meta-physical* explanation, which affords us the key to all its assumptions, but just on this account it must necessarily follow quite a different path. The first step to this is that one should bring to distinct consciousness and firmly retain the difference of the two, hence the difference between *physics* and *metaphysics*. . . .

"I say, then, everything, and yet nothing, is physically explainable. As for the motion of the struck billiard-ball, so also for the thinking of the brain, a physical explanation must, at least in theory, ultimately be possible, which would make the latter comprehensible in the same sense as is the former. But even the former, which we imagine we understand so perfectly, is at bottom as obscure to us as the latter; for what the inner nature of expansion in space may be—of impenetrability, motility, hardness, elasticity, and gravity—remains, after all physical explanations, a mystery, just as much as thought. But because in the case of thought the inexplicable appears most immediately, a jump was at once made here from physics to metaphysics, and a substance of quite a different kind from all corporeal

substances was hypostatised—a soul was set up in the brain. But if one had not been so dull as only to be capable of being struck by the most remarkable of phenomena, one would have had to explain digestion by a soul in the stomach, vegetation by a soul in the plant, affinity by a soul in the reagents, nay, the falling of a stone by a soul in the stone. For the quality of every unorganised body is just as mysterious as the life in the living body. In the same way, therefore, the physical explanation strikes everywhere upon what is metaphysical, by which the explanation is annulled, i. e., it ceases to be explanation. Strictly speaking, it may be asserted that no natural science really achieves anything more than what is also achieved by botany: the classification of samenesses. A physical system which asserted that its explanations of things were really sufficient, and thus exhausted the nature of the world, would be genuine *naturalism*, represented by Leucippus, Democritus, and Epicurus down to the *Système de la Nature*, and further, to Delamark, Cabanis, and to modern materialists. . . . They endeavor to show that all phenomena, even those of mind, are physical. And they are right; only they do not see that all that is physical is in another aspect also metaphysical. But, without Kant, this is indeed difficult to see, for it presupposes the distinction of the phenomenon from the thing in itself. . . . Such an *absolute system of physics* as is described above, which leaves room for no *metaphysics*, would change the *Natura naturata* into the *Natura naturans*; it would be physics established on the throne of metaphysics. . . .

“Indeed, behind the reproach of atheism, which in itself is absurd and for the most part malicious, there lies, as its inner meaning a truth, which gives it strength; this is the obscure conception of such an absolute system of physics without metaphysics. Such a system would necessarily be destructive of ethics; and while theism has falsely been held to be inseparable from morality, this is really true only of *metaphysics in general*, i. e., of the knowledge that the order of nature is not the only and absolute order of things. Therefore we may set up this as the necessary *Credo* of all just and good men: ‘I believe in metaphysics.’”

We learn from these passages the close connexion which obtains between the belief in things-in-themselves and the idea of a metaphysical knowledge, which is said to cast all physical knowledge into the shade. It is strange only that physical knowledge, which is supposed to be a mere illusion, reveals to us new marvels every day, while that boasted metaphysical knowledge in spite of its pretensions, remains either a vainglorious declamation or comes modestly down to the confession of agnosticism that here we are at our wit's end and that metaphysical knowledge is impossible.

Many a scientist is inclined simply to ignore the pretensions of metaphysics, but that will not do; for there is a truth at the bottom

of the idea of things-in-themselves which cannot be neglected, and the declaration that the nature of knowledge of any kind, in matters philosophical or scientific, is a description of facts will not be satisfactory until we understand the full importance of this definition. What we need is first a mutual understanding between philosophers and scientists and then a reconciliation of their points of view. We need a *philosophy of science*, whose duty it is to prune philosophical speculation, to render science conscious of its aim and methods, to correlate the various branches of investigation, and systematise its most important results in the grand outlines of a scientifically sound world-conception.

SCIENTIFIC KNOWLEDGE AND PHILOSOPHICAL KNOWLEDGE.
CORRESPONDENCE WITH PROFESSOR JODL.

Three years ago we discussed (in *The Monist*, Vol. II, No. 2) the problem "Are there Things-in-Themselves?" and took the liberty of alluding to Prof. Friedrich Jodl's view of a modernised thing-in-itself. Professor Jodl, well known to our readers by his brilliant contributions to *The Monist*, as a representative thinker of unusual power and a scholar of first rank, (he is the author of a voluminous work, entitled *Die Geschichte der Ethik in der neueren Philosophie*,) does not discard the term thing-in-itself as we do, but retains it on the ground that cognition always leads to some x , as after all the best expression to denote the total mass of the unknown or unknowable, which is infinite and cannot by any finite amount of knowledge be noticeably diminished. In reply to our arguments Professor Jodl wrote as follows in a private letter:

"A formal rejoinder to your criticism you can hardly expect from me, for, despite what you say against my remarks on the "thing-in-itself," I am not sensible of any far-reaching difference between us. I agree perfectly with your definition of reality; reality (*Wirklichkeit*) is effectiveness—relationship; and, therefore, a "thing-in-itself," in the sense of an isolated "thing by itself" is a self-contradiction. And one more thing is certain. We can only call a thing real provided it produces effects, not generally only, but upon us. But how you propose, even admitting all this, to eliminate the mooted x from our cognition, I cannot exactly understand, no more than I can accept your definition of cognition. The definitions of Mach and Kirchhoff which you cite, are not philosophical definitions, that is,

epistemological definitions, but propædæutic or didactic definitions, by positive inquirers in special fields. In a philosophical sense I regard them as nothing more nor less than incorrect. It is quite right that we should regard a matter as explained scientifically when it has been shown to be a special case of a process already known; but as philosophers, it is hoped, we shall not deceive ourselves by forgetting that this known phenomenon closely viewed is also something about which we know nothing. We agree to leave it out of account simply because it is relatively near to our imaginations and of common occurrence.

"Take the most general example.

"When Newton saw the law of falling bodies in the central motion of the moon about the earth, the motion of the planets was "explained," and astronomers were able to "describe" that motion in Kirchhoff's sense as precisely as possible, that is, by means of mathematical principles. But what really takes place in gravitation, whether it is a general property of matter, whether it is the effect of mechanical causes—on that point, as you know, people are still, or rather, are *again*, racking their brains. In other words, this so-called "explanation" leads us to a phenomenon which we are unable to trace back to one that is better known, because our powers of representing it fail us, because it is not made up of any ulterior elements for us, and is therefore called an "elementary fact." Now this signifies simply that we cannot penetrate further here; for us this is a *datum*. But shall we make ourselves believe that because we cannot *see* further there actually *is* nothing further here? Gravitation is real. Surely, that means not only that it *produces* effects, but also that it is *effected*. And so it is with all "elementary" facts. Everywhere the lines of the co-ordinate system in which we draw up our picture of the world carry us into realms of obscurity. We can refuse—and that is the meaning of positivism—to fill up this realm of obscurity with vague pictures of fancy and idealistic speculations. But we need not on that account believe that the region of light which we survey is the universe.

"I would willingly discard the name "thing-in-itself" if it was at all suspected that any sort of ineradicable transcendentalism, dualism, or mysticism were enconced behind it. With such stowaways I will have nothing to do. I am a convinced upholder of the monistic view of the world, and only mean that an honest confession of the limitations of our knowledge injures in no respect the cause of monism."

This was my reply to Professor Jodl:

"Many thanks for your valuable lines. Your exposition in defence of the *x* in the world, it seems to me, hits the point, and here apparently lies the difference between our views, so far as a difference obtains at all, with all agreements on other important points. I regard the acceptance of the Mach and Kirchhoff definition, or rather conception, of cognition in the philosophical domain, as very important for constituting a sound positivism. And why? Because this conception ren-

ders clear the situation ; because it overcomes the ignorabimus theory of agnosticism. Knowledge is not a distinct thing in the world. It is a fact which is inter-catenated with other facts. It has a cause and serves a purpose. Knowledge develops in organisms for the purpose of their adaptation to surroundings. The purpose of knowledge is found in action. If an organised being strives for something, it constructs through a combination of representations a plan for action. An organised being is in need of such representations, which denote things in such an analogous and corresponding way, that the subjective image and the objective thing remain in a correct relation. Knowledge, therefore, is a portrayal not only in images but also in thought-symbols, for the purpose of regulating action. It is a representative remodelling of things.

" Knowledge is the product of cognition, it consists in the lucidity and correctness of representations. Cognition is that mental process through which we grasp the sameness of several phenomena. When Newton comprised the motion of the moon and the fall of a stone into one common formula, we were put in possession of a comprehension and explanation of these phenomena. They are now plain to us, and we can formulate their actions in exact terms and with mathematical precision, which can practically be applied as a basis for action. So far, good ! I do not believe that on this subject there is any difference of opinion ; but now you add, that this conception of knowledge and cognition is quite allowable for propædæutic and didactic purposes in the various specialities of science, but in a philosophical sense, it is wrong.

" I agree with you that it is right to concede honestly the limitations of our knowledge. We know comparatively very little of the world which in its infinity surrounds us. The circle of light visible to us is by no means the universe. This consideration, however, lies in another field, and I have never thought of combating this kind of agnosticism, which I call ' the agnosticism of modesty.' I maintain that knowledge consists in a correct representation of things, and *I cannot understand what knowledge could otherwise be*. Suppose we knew everything knowable, our knowledge would be an orderly system of representations ; there would be formulas, with the assistance of which we could under all circumstances predetermine the course of events. That the existence of facts is very wonderful cannot be denied ; and indeed in the same way the existence of all facts, without any exception, is equally wonderful. The existence of the world, such as it is, a cosmos arranged according to law, remains grand and overwhelming even to him who has through and through understood its harmonious order. If that is your mysticism, I adopt it. I have no objection to this mysticism of sentiment. On the contrary ; I endorse it. (See *Fundamental Problems*, page 157, and *Homilies of Science*, the chapter on ' The Value of Mysticism,' page 52.) This kind of mysticism is thoroughly in accord with clearness of reasoning and with the strictest precision of sound knowledge.

" Now, if knowledge is not mere representation, not a portrayal of things, not a description for the purpose of regulating our action, pray tell me, what can it be ?

If we call this kind of knowledge scientific knowledge, what do you mean by philosophical knowledge? I must confess that I do not know how you can answer this question.

"Schopenhauer says in a similar spirit: 'Physically, to be sure, everything, but metaphysically, nothing is explainable.' But what is a metaphysical explanation?

"The sole answer which I can imagine is, that a metaphysical explanation expects to receive an answer as to why the world exists at all. This question may mean either, 'How did the world originate out of nothing?' or 'What is the innermost nature of things by dint of which they exist?' The former question finds its solution in the law of the conservation of matter¹ and energy, the latter is nothing but an inquiry into the most general feature of being.

[The former is the question after the first cause; the latter after the ultimate *raison d'être* of the universe. The ontological problem originates by a confusion of these two questions.]

"My answer would be, that the ontological problem is illegitimate. We apply the law of causation where we should inquire for the ultimate *raison d'être*. Ontological causality, so called, leads to the formulation of problems which are unsolvable, and to questions which are unanswerable.

"Cognition, the method of which consists in comprehending samenesses, ultimately leads to, and naturally ends in, a universal conception, which represents all the features common to all existence—the idea of being in general, of existence, or whatever we may call it. On the other hand, the law of cause and effect has not in the same sense a natural limit. We can go backward into infinity, and must again and again inquire for a cause of the cause. Only by committing the error of treating the law of reasoning after the analogy of the law of cause and effect, we inquire for the *raison d'être* of the ultimate *raison d'être*, and expect to find a still more general law than the universal law. We want a thought-symbol which would subsume the all-comprising thought-symbol of the universal under a still wider generalisation. Figuratively speaking, we ask, after having found the centre of the circle, 'Where is the middle of the centre?'

"As soon as we become conscious of the truth that all knowledge is representation, the ontological problem, so called, disappears and is recognised as an illegitimate problem.

"You say, 'we can refuse to fill up this realm of obscurity with vague pictures of fancy and idealistic speculations,' and you regard this as 'the meaning of positivism.' This, indeed, is the meaning of the French positivism represented by

¹ We here include ether under the term "matter." Supposing the chemical elements such as we find them in experience were due to a condensation of ether, the law of the conservation of matter would not be overthrown, at least not in the sense in which it has been held by physicists.

Comte and Littré, to whom unknowable essences have still a real existence; but this realm of obscurity disappears when the sham problem has been recognised as a sham problem. From my standpoint there is not even a need of filling the realm of obscurity which has a fictitious existence, originating through the ontological problem in vague speculations.

"The so-called ontological problem which inquires after the ultimate *raison d'être* of existence as though the universality of being could be the effect of a cause, leads to a dualism. To be sure, your thoughts are thoroughly monistic, but you commit yourself to a dualistic conception when you say 'Gravitation is real: surely that means not only that it produces effects, but also that *it is effected*.' Here I cannot follow you. The gravitating stone produces effects. It is active itself. The stone in its connexion with the universe is doing work, and I do not find myself necessitated to seek for anything metaphysical behind the stone, by which 'it is effected' and in which we must seek the condition of its activity.

"I repeat once more, I fully recognise the immensity, the inexhaustibility, the grandeur, and the wondrousness of the existence of the world in all its details. I only object to recognising (paradoxically speaking) that kind of cognition which never can lead to cognition.

Professor Jodl wrote back:

"I have studied your long letter of February 17th with the deepest interest and with genuine satisfaction. As I had foreseen, it makes plain our essential agreement in a number of important points, and by your exceedingly lucid presentation puts me in a position to clear up the only point in which my view appeared to you dubious.

"You ask me what I understand by 'a knowledge that is not simply imitation and reproduction with a view to regulating conduct.'

"You exclude, as I think, in a very apt manner, the question concerning the ground of existence from the knowable. I would subscribe to all that, word for word. I feel no need whatever of filling out τὰ μετὰ τὰ φυσικὰ with pictures of fancy; and an agnosticism and positivism that should only be a golden bridge for mysticism, is in the highest degree repugnant to me. The Comtian formula, *Vivre au grand jour*, has far more importance for me as a theoretical than as a practical principle.

"But what, then, is my objection to your position, you will say. I can tell you that now, simply enough, in the words of people who are much profounder than I, and save, in doing so, paper and postage. I will ask you to take up Locke's *Essay Concerning Human Understanding*. First, in Book 4, Chapter 11, paragraph 8, you will find a full elaboration of that organic teleology which you emphasise. If, afterwards, you will read Chapter 3 of the same work, then Chapter 6, especially from paragraph 5 onwards, comparing with that Book 2, Chapter 23, *passim*, and Book 3, Chapter 6, paragraph 9, you will have pretty much all that *my* agnosticism signifies; particularly, if you will take the slight additional trouble of turning to Hume's *Inquiry*

Concerning Human Understanding and of reading over, Sections 4 and 5, "Sceptical Doubts Concerning the Operations of the Understanding." It would be impossible for me to state more plainly what I mean than is done there. You will not believe that I could hope, by means of any sort of higher speculation, which would be synonymous with higher folly, to smuggle in through a back door the knowledge there declared by a critical investigation of the nature of reason to be impossible. I accept completely your 'agnosticism of modesty,' but would have the expression understood in its extensive as well as its intensive sense. The philosopher cannot know things differently from what science does; but he must always keep before his mind the critical limitations and value of this knowledge. And in this sense only does the Mach-Kirchhoff definition appear to me insufficient.

"I believe that we now agree perfectly; for I feel sure that you will hold the expositions of Locke and Hume on the nature and limits of knowledge to be irrefutable."

Now we cannot deny that the passages cited by Professor Jodl contain much sound reasoning, and we children of the latter part of the nineteenth century are much indebted to our predecessors of the end of the seventeenth and the beginning of the eighteenth century. But it seems to me that there are several propositions of Locke and Hume to which we must take exception. I, for one, cannot regard their arguments as "irrefutable," and many of their expressions need a restatement. We confine ourselves to the most important points.

LOCKE'S UNKNOWABLE ESSENCE OF THINGS.

Locke says in his *Essay Concerning Human Understanding*:

"The nominal essence bounds the species—not the real essence which we know not.—III, vi, 7-9.

"Nor, indeed, can we rank and sort things, and consequently (which is the end of sorting) denominate them by their real essences because we know them not.—III, vi, 9.

"No proposition can be known to be true where the essence of each species mentioned is not known.—IV, vi, 4.

"This more particularly concerns substances. . . . For, how can we be sure that this or that quality is in gold when we know not what is or is not gold? since in this way of speaking nothing is gold but what partakes of an essence, which we not knowing cannot know where it is or is not, and so cannot be sure that any parcel of matter in the world is or is not in this sense gold; being incurably ignorant whether it has or has not that which makes anything to be called 'gold,' i. e., that real essence of gold whereof we have no idea at all: this being as impossible for us

to know, as it is for a blind man to tell in what flower the color of a pansy is or is not to be found, whilst he has no idea of the color of a pansy at all."—IV, vi, 497.

Strange how firmly Locke clings to his idea of substance, although he is quite conscious of the confusion into which it implicates his reasoning. He says (II, xxiii, 2):

"If any one will examine himself concerning his notion of pure substance in general, he will find he has no other idea of it at all, but only a supposition of he knows not what support of such qualities which are capable of producing simple ideas in us; which qualities are commonly called 'accidents.' If any one should be asked, 'What is the subject wherein color or weight inheres?' he would have nothing to say but, 'The solid extended parts.' And if he were demanded, 'What is it that solidity and extension inhere in?' he would not be in a much better case than the Indian before mentioned, who, saying that the world was supported by a great elephant, was asked, what the elephant rested on? to which his answer was, 'A great tortoise'; but being again pressed to know what gave support to the broad-backed tortoise, replied,—something, he knew not what. And thus here, as in all other cases where we use words without having clear and distinct ideas, we talk like children; who, being questioned what such a thing is which they know not readily give this satisfactory answer,—that it is something; which in truth signifies no more, when so used, either by children or men, but that they know not what; and that the thing they pretend to know and talk of, is what they have no distinct idea of at all, and so are perfectly ignorant of it, and in the dark. The idea, then, we have, to which we give the general name 'substance,' being nothing but the supposed, but unknown, support of those qualities we find existing, which we imagine cannot subsist *sine re substante*, 'without something to support them,' we call that support *substantia*; which, according to the true import of the word, is, in plain English, 'standing under,' or 'upholding.'"

Locke defines body as "an extended, solid substance," and soul as "a substance that thinks." Had not the idea "substance" been better omitted altogether? Instead of peopling all the domains of existence with unknown substances, would it not be enough to say that body is extension and solidity, and a man's soul is his thinking? Locke's philosophy shows already an antimetaphysical trend, so much so that the natural solution of the difficulty that this mythical substance is a redundant and gratuitous invention, seems to suggest itself in many passages, and the Bishop of Worcester actually accused Locke of "almost having discarded substance out of the reasonable part of the world." Anent this accusation, Locke replies

that he does "not know what to plead to," and quotes a string of sentences in which he asserts the existence of substance, the real nature of which is unknown. As to complex ideas, such as *horse* or *stone*, which are collections of several simple ideas, Locke says (II, xxiii, Note B):

"Because we cannot conceive how they should subsist alone, nor one in another, we suppose them existing in and supported by some common subject, which support we denote by the name *substance*; though it be certain we have no clear or distinct idea of that thing we suppose a support."

Locke declares that the uncertainty which hovers as a Damocles sword over knowledge, rendering it all through purely phenomenal, need not alarm nor disturb us, for "the relative certainty is as great as our condition needs." Our "evidence is as great as we can desire, being as certain to us as our pleasure or pain, i. e., happiness or misery, beyond which we have no concernment, either of knowing or being."

The consistent result of Locke's position is a suspension of judgment on almost every question of importance; for instance, the existence of spirits is to Locke a matter of faith (IV, xi, 12), "however true it may be that all the intelligent spirits that God ever created do still exist, yet it can never make a part of our certain knowledge." We have to abandon all attempts at demonstrating their existence and even at investigating the matter.

HUME'S SCEPTICISM.

The chapters cited by Professor Jodl from David Hume (*Enquiry Concerning Human Understanding*, Sec. IV and V) are of great importance, and we advise every lover of philosophy to study them carefully and critically, especially Section IV, which is entitled "Sceptical Doubts Concerning the Operations of the Understanding."¹ This chapter contains in *nuce* the fallacies of both the agnosticism and the metaphysicism of to-day.

Hume's scepticism is in itself a good thing, for he has put his finger on the sore spot of the problem of philosophy; Hume finds

¹Ed. L. A. Selby-Bigge, M. A., Oxford, 1894, pp. 25-39.

that all our reasoning concerning matter of fact is based upon our notion of causation. Our notion of causation again is based upon experience. But he continues: "What is the foundation of all conclusions from experience?" He adds: "This implies a new question which may be of more difficult solution and explication," and comes finally to the conclusion that as the difficulty is unsurmountable, we can have no other than "a negative answer." He says:

"Thus the observation of human blindness and weakness is the result of all philosophy, and meets us at every turn, in spite of our endeavors to elude or avoid it."

What are Hume's arguments for this most distressing conclusion which, if it were true, would necessarily leave a gap in every scientific world-conception?

Hume maintains that our knowledge of causation "is not in any instance attained by reasonings *a priori*, but arises entirely from experience" (p. 29). He declares:

"The mind can never possibly find the effect in the supposed cause, by the most accurate scrutiny and examination. For the effect is totally different from the cause, and consequently can never be discovered in it."

And the gist of his arguments is summed up in the following statements:

"That all arguments concerning existence are founded on the relation of cause and effect.

"That our knowledge of that relation is derived entirely from experience.

"That all our experimental conclusions proceed upon the supposition that the future will be conformable to the past.

"To endeavor, therefore, the proof of this last supposition by probable arguments, or arguments regarding existence, must be evidently going in a circle, and taking that for granted, which is the very point in question."

Hume sees pretty clearly the ultimate conclusions of his theory which are nothing less than a denial of the authority of reason. He declares in a long footnote on pages 44-45 that the distinction between reason and experience, useful though it may be, is at bottom "erroneous" and "at least superficial."

All our reasoning is based, according to Hume, upon a *petitio principii*. That a certain cause has always produced a special effect

in the past is no reason why the same cause will produce the same effect in the future. Hume says :

"If you insist that the inference is made by a chain of reasoning, I desire you to produce that reasoning. The connexion between these propositions is not intuitive. There is required a medium, which may enable the mind to draw such an inference, if indeed it be drawn by reasoning and argument. What that medium is, I must confess, passes my comprehension ; and it is incumbent on those to produce it, who assert that it really exists, and is the origin of all our conclusions concerning matter of fact."

Hume presents his theory with great modesty and at the same time with extraordinary assurance. He says :

"The best expedient to prevent this confusion, is to be modest in our pretensions ; and even to discover the difficulty ourselves before it is objected to us. By this means, we may make a kind of merit of our very ignorance."

Hume proposes the question as much for the sake of information, as with an intention of raising difficulties, keeping, as he says, his "mind open to instruction, if any one will vouchsafe to bestow it upon" him ; but having endeavored to show that none of the branches of human knowledge can afford an argument that might have escaped him he feels confident that his scepticism is impregnable. He says :

"This negative argument must certainly, in process of time, become altogether convincing, if many penetrating and able philosophers shall turn their enquiries this way and no one be ever able to discover any connecting proposition or intermediate step, which supports the understanding in this conclusion."

In the course of time, many able thinkers have adopted Hume's scepticism and by a kind of common consensus his negative solution has developed into a philosophical dogma which has acted like a bane upon thought and is still blockading the progress of philosophy.

There is one strange thing about Hume which should have made him suspicious of his own proposition. His theory and his practice do not agree, and he feels that his philosophy is sicklied over with the pale cast of thought. He says in his *Treatise of Human Nature*, IV, 2, p. 218 :

"This sceptical doubt, both with respect to reason and the senses, is a malady."

To escape the evil effects of scepticism, Hume's advice is as follows :

"As the sceptical doubt arises naturally from a profound and intense reflexion on those subjects, it always increases, the farther we carry our reflexions, whether in opposition or conformity to it. Carelessness and inattention alone can afford us any remedy. For this reason I rely entirely upon them."

With all due deference to the keenness of the great Scotchman we cannot say that a philosophy whose sole remedy for a malady of reason lies in "carelessness and inattention" breathes the spirit of genuine inquiry or can make any claim of being "irrefutable."

Hume proposes not to make any use of his scepticism when dealing with questions of real life. So emphatic is he in the inapplicability, and that means a practical rejection, of his negativism that he says :

"None but a fool or madman will ever pretend to dispute the authority of experience."

Experience, according to Hume's theory, is a chaos of isolated items, which can never acquire authority, but in practice he considers the denial of its authority as madness. What Hume here calls "authority of experience" is nothing but his vigorously repudiated scientific certitude, the method of which, commonly called reason, is gained through a systematisation of experience.

Hume feels the sting of his inconsistency and he explains his position by the following consideration :

"My practice, you say, refutes my doubts. But you mistake the purport of my question. As an agent, I am quite satisfied in the point ; but as a philosopher, who has some share of curiosity, I will not say scepticism, I want to learn the foundation of this inference. No reading, no enquiry has yet been able to remove my difficulty, or give me satisfaction in a matter of such importance. Can I do better than propose the difficulty to the public, even though, perhaps, I have small hopes of obtaining a solution? We shall at least, by this means, be sensible of our ignorance, if we do not augment our knowledge."

Considering Hume's arguments I freely grant that all our knowledge is ultimately derived from experience, but my definition of experience differs from the traditional notion. When Hume speaks of experience, he always enumerates a number of isolated cases, and

calls cause and effect "two objects following one another." Kant, in close agreement with Hume's conception, calls experience "the raw material of our sensuous impressions" and carefully excludes from it all purely formal knowledge and rational judgments. Now there is no doubt about it, that formal knowledge, be it geometrical, arithmetical, logical, or purely rational of any kind, cannot be derived from the sense-element of experience, after we have carefully eliminated from experience the quality of form. If, however, we understand by experience the whole effect of events upon sentiency, including both qualities, form and sensibility, we shall see that all the formal sciences including pure reason, our conception of the purely formal (generally misnamed the *a priori*), the notion of causation, arithmetic, geometry, algebra, and logic can very well be derived from experience. It is quite true, as Kant convincingly proves, that the purely formal sciences are ideal; they are ideal constructions built up in our own mind: but the material out of which we have raised these magnificent structures, which are the notions of pure forms in various domains—pure space, progress in time or units of counting, mere thought-relations such as genus and species, etc., etc.,—have been furnished us by experience. Our notions of pure form are abstractions which we have derived by limiting our attention to pure relations and excluding the things among which they obtain.

By regarding experience as a number of isolated sense-impressions without coherence, Hume starts with a wrong idea of causation. Instead of analysing some phenomenon, he makes a synthesis of what he is pleased to call cause and effect, and finds no necessary connexion among them. He should first have investigated the facts and then explained the meaning of the words cause and effect; but he takes their meaning for granted, and since this meaning is nothing but a confused notion of unvariable succession, it is natural that the whole argument of Hume's scepticism is built upon sand.

The law of causation is a purely formal law and it can justly claim the same validity as all mathematical and logical theorems. It is at bottom the same law as the law of the conservation of matter and energy, which simply means that nothing can originate out of

nothing, and that all processes are transformations. The phenomena which we observe are changes, not creations and not annihilations. It is true that cause and effect are radically different but they are not without definite connexions. Cause and effect are not "objects following one another," as Hume says, but interrelated events.

Poison is not a cause, but the act of taking poison ; neither is a dead mouse the effect, but the death of the mouse. Every cause is a motion, an act, or an event, which in a given system of conditions through a disturbance of their equilibrium produces other motions, acts, or events, ultimately resulting in some definite change, called the effect.

When we inquire for the reason why the cause takes effect, we want to know the natural law according to which a given agent acts under given conditions. Natural laws formulate in exact terms the qualities of things, and are nothing more nor less than descriptions. The progress of science warrants the assumption of regarding all natural laws as forming one great system in which the more particular laws are applications of the more general laws to peculiar conditions, and all the general laws form various aspects of the universal order of nature which is at bottom the same as the simple truths of the formal sciences, such as $1 + 1 = 2$, or the angles of equilateral triangles are equal, the intrinsic necessity of which can easily be understood.

Hume's conception of causation is so confused that he constantly mixes up the ideas cause and reason, and speaks of "general causes" and "ultimate causes," when he means reasons of reasons, requiring as an answer more general and universal laws.

Our expectation that the future will resemble the past is based upon the idea that every event that happens is due to a change of place. The state of things and their actions may become very different from what they are now, and conditions may arise which will produce unprecedented constellations, so that the same causes will no longer be attended by the same effects. But, whatever may happen, events must always be due to a cause and will be the result of a mere transformation.

The medium which Hume could not find and which as he says

is required to avoid the vicious circle of founding causation upon experience and experience upon causation, is contained in the eliminated portion of experience, which in his days was called the *a priori*, and which we call the purely formal or the relational. The surrounding world, through contact with which experience originates, is not like a bag of peas, a disconnected number of isolated objects; the world, our own subjectivity included, is a system of relations which in their general features (or, as Germans would say, in their *Gesetzmässigkeit*) are universal. We can describe them as what we call the laws of form.

Our ideal systems of purely formal relations can be used for reference in measuring and counting, and thus the purely formal sciences become the tools of investigation, without which science would be impossible. Our methods of investigation, which include counting, measuring, and the notion of causality, have been derived from experience; they are the formal elements of experience reduced to system and making possible a higher kind of experience, science, which is methodical observation, experiment, and a systematic description of experience.

This is no vicious circle, but an evolution from lowly beginnings to a higher condition, and every stone of the structure of the philosophy of science, which sets forth and explains the principles of scientific inquiry, rests upon a safe foundation, the ultimate basis being experience. The medium which, as Hume said, passed his comprehension, is the systematisation of the formal elements of experience in ideal reconstructions for a so-called *a priori* application to future experiences. And we are so sure of the reliability of this medium, that, as Hume himself confesses, "none but a fool or madman will ever pretend to dispute it or reject it as the great guide of human life."

Reason, in our conception, is systematised experience; it is an ideal and methodical reconstruction of the relational element in experience. We agree accordingly with Hume when he declares that there is no reason without experience. But we cannot grant that all reasoning is mere custom, and that therefore pure reason pos-

sesses no authority save that of custom derived from a haphazard accumulation of many experiences.

Hume misunderstands the very nature of reason. Reason is not a collection of many fortuitous observations, but the quintessence of their necessary interrelations extracted from experience. Reason is not one fact among other facts, not a faculty besides other faculties, such as sensation, but a method, and on the reliability of this method the very possibility of science depends. If we could make no other inferences than such as are drawn from disconnected experiences and not from the systematisation of experience which is called reason, all our arguments would indeed be vain, the conjunction of cause and effect would be "arbitrary and casual," and philosophy simply the recognition of the utter hopelessness of scientific aspirations.

Hume concludes his arguments with this remark :

"If I be wrong, I must acknowledge myself to be indeed a very backward scholar."

We deny the logic even of this last proposition. Hume may have been and indeed he unquestionably was a great scholar and a keen philosopher. But the fact that a man is a scholar does not make him infallible. Agassiz was a great scientist, and yet he was mistaken on the most important problem of his science. The most penetrating thinker may err in his solution of the burning question of his day, while less able minds may hit the truth, which is either due to a greater clearness of comprehension, or may sometimes happen because they are less bewildered by the knowledge of too much trivial detail.

We cannot say that Hume's expositions go to the bottom of the problem. He sees the problem but does not contribute to its elucidation. He is seeking its solution, so far as the looseness of his terms allows him to do so, but has a peculiar instinct of avoiding a discussion of those things which would have afforded him the best assistance in solving the problem.

Hume's errors have become so popular that they permeate even to-day our whole intellectual atmosphere and exercise a baneful influence upon the minds of many prominent thinkers. How injurious

the effect of this anodyne is may be gathered not only from the popularity which Mr. Spencer's agnosticism enjoys, but also from such cases as the late Professor Romanes's *Thoughts on Religion*. Hume's negativism has produced a stagnancy in the philosophical world which prevents the mass of our best thinkers from understanding the needs of the time and finding the solution of the great religious problem that now agitates the world. The propositions made in these pages are still a voice crying in the wilderness, but the time will come, and is near at hand, when their truth will be recognised in both the churches and the universities. Professional philosophers must bestir themselves lest they be left behind in the general advance of the sciences ; and the clergy, when pressed harder and harder by scepticism, will find in the pages of *The Monist* a panoply for the defence of religion—not of their antiquated creeds, but of a regenerated faith which has been purified in the furnace of science.

KANT'S IDENTIFICATION OF THE IDEAL AND THE SUBJECTIVE.

Kant was the first to understand the sweeping importance of Hume's scepticism, and he undertook to answer his arguments. Kant called attention to the fact that while Hume had questioned the necessary relation of cause and effect, there were a number of other notions, not less universal and necessary, such as mathematical theorems, the validity of which Hume has never thought of doubting. All the formal knowledge of the mind, under the name of pure reason, is in the same predicament and should receive the same treatment. But Kant's solution of the difficulty as offered in his *Critique of Pure Reason* is almost as bad as, if not worse than, Hume's negativism, for Kant, after having proved all formal knowledge to be ideal, by a strange confusion of ideality with subjectivity, insisted upon the mere subjectivity of time, space, logic, and all other purely formal conceptions. It is true, he always speaks of ideality, but he means subjectivity and thus renders all objective or scientific philosophy illusory. Hence his proposition that things-in-themselves are unknowable.

Sensations, it is true, considered as pure feelings are subjective,

but their various forms symbolise the things through contact with which they originate, and thus they have reference to objective realities: their meaning is not subjective but objective. We grant that there is a difference between the objective world, which appears to us as material, and the subjective world, which is sensory, but one feature is common to both, viz., the formal or relational. If the formal were, as Kant claims, purely subjective, the theory that knowledge is impossible would be justified, and agnosticism would be firmly established.

Man's comprehension of facts is, as it were, a bridge between the subjectivity of his soul and the objectivity of the world in which he lives. Man's knowledge describes his surroundings as the sailor's chart depicts the seas on which he sails. Sense-images and ideas represent the objects of reality and their relations; and the import and practical usefulness of ideas grows according as they approach the ultimate ideal of cognition, which is the comprehension of all difference as a difference of form according to universal formal laws.

Kant distinguishes two sources of knowledge, sensation and pure reason. Sensation in itself is blind, and pure reason in itself is empty. Sensations are incidental and particular, coming to us singly in a haphazard way and without affording any information concerning a necessary connexion. However, the most striking character of pure reason is the intrinsic necessity and universality of its statements; and Kant maintains that from the beginning or *a priori* it lies ready in the human mind in a state of latency to be roused by sense-experience. Kant argues that, since pure reason with its necessity and universality, including the conceptions of space and time and the categories, is not imported into the thinking subject by sensation, it must be purely subjective or ideal. It is a form of the thinking subject, not of the objective world.

Now, we do not deny the ideality of pure reason. Our space-conception, our time-conception, our numbers, geometry, logic, and the schemata are ideal; they are systems of pure thought and belong to the realm of ideas; they are mental constructions. Indeed, they are *purely* ideal, for mathematical points, geometrical triangles, pure numbers, and logical categories do not, as such, exist in real-

ity. At the same time they are in Kant's sense of the word "transcendental."¹ Yet while they are purely ideal and transcendental they are by no means purely subjective. Kant uses the term ideal in the sense of subjective, but the two terms are by no means identical. Both terms are similar and may sometimes cover the same ground so as to be used as synonyms and to allow a substitution of the one by the other. Nevertheless, they are quite disparate; for instance, the feeling feature of sensations is purely subjective, but it is not ideal.

We define ideal as belonging to, or having reference to, the realm of ideas; subjective as belonging to, or having reference to, the realm of the subject. While the laws of form (including the laws of time and space) are purely ideal constructions, we cannot say that time and space are purely subjective. Form is a quality of objective existence, and all bodies are possessed of definite shapes. Form and matter are inseparably connected, and our first notions of pure forms are abstractions. Time and space, it is true, are, as Kant argues, inseparably connected with the thinking subject, but only in so far as the thinking subject is at the same time an object moving about in the objective world as a body of a definite shape and with definite whereabouts. The ideal constructions of mathematics, arithmetic, and logic, are built of materials quarried from the mines of objective existence, the knowledge of which has been acquired by experience. They convey the most reliable information concerning certain universal and therefore very important features of objects and become thus the tools of cognition. We must have them ready *before* we can begin a systematical investigation of objects, and in this sense alone they are *a priori*.

The necessity and universality of a statement, which are to Kant the most important evidence of subjectivity (or, as he says, "ideal-

¹ Kant distinguishes "transcendent" and "transcendental," the former being that which lies beyond the possibility of experience, the latter that which is the condition of experience. The notions of time, space, and any other kind of relation (including causality) are transcendental, but not transcendent. All purely formal ideas are mental tools, for cognition consists in tracing the samenesses or differences of form and science would be impossible without measuring or counting.

ity”), indicate, in our conception, objectivity. The most elementary particle of pure form (if we be permitted to speak of form as if it could exist in parts like a material substance) contains *in nuce* all the conditions of its complex potentialities. Given the progression by steps, and we have the elements from which by various manipulations the whole science of arithmetic with its most involved calculations can be derived. Given the possibility of motion in all directions, and we can by merely remaining consistent build up geometry in all its branches with its wonderful harmony and intrinsic necessity. The same process performed in the same way produces the same result, and this is the key to the perplexing mystery that, by the help of an ideal construction, we gain information about the nature of objects. The comet does not obey the subjective theories of the astronomer’s mathematics, but the astronomer’s mathematics is a mental construction from purely formal elements which are universal features of objective existence, applicable to all the analogous cases which may take place in any part of the universe. The model which we construct corresponds to the reality, so that the former affords information concerning the latter. Our purely formal systems are ideal, but they describe features of objective reality. They are transcendental (i. e. indispensable conditions of experience) only because they describe objective features.

The formulations of the formal laws, as we have them in mathematics, logic, and other formal sciences are, it is true, purely ideal, they are mental constructions, but the formal laws themselves are for that reason not merely subjective ; they are objective and constitute the most important feature of reality, which is the immanent and all-pervading God whose presence is so intrinsic that we are unable to think any possible kind of existence without it ; and the more clearly this feature of reality is mirrored in a sentient being where it is called reason, the higher that being ranges in the scale of evolution, the more truly it can be said to be an image of God and the more far-reaching will be the sway of its dominion over the forces of nature. In a word, manhood is the incarnation of the formal law in its application to the problems and duties of practical life.

No better evidence can be given in favor of the philosophy of

science than the truth that there are not various reasons different in kind. Neither can reason ever be self-contradictory, but is and must always remain one and the same, unfailing in its consistency and harmonious unity.

The uniqueness of reason does not indicate its latency in the subject as subject, but its latency in existence as existence. There is no existence bare of that formal element which by the same actions would not develop always the same result, for it is this sameness alone that constitutes the intrinsic necessity and universality of all formal laws of thought, called reason. This formal feature of existence, which is at the bottom of all natural law by making the same conditions produce the same results, is the source of cosmic order; it is the *Tao* of Lâo-tze, the Amitaba of the Buddhists, the Adrishta of the Brahmans, the Christian Logos that was in the beginning and has become flesh in the Son of Man. If anything is supernatural, it alone is worthy of the name, for it is above this real world of ours in so far as it is a condition that applies to any possible world. If there is anything not purely subjective, but objective, universal, and an indelible feature of reality, it is the germ of reason, the intrinsically necessary presence of law in any imaginable kind of existence.

METAPHYSICS MODERNISED. PROFESSOR DEUSSEN'S PHILOSOPHY.

The latest history of philosophy, which comes from the scholarly pen of Prof. Paul Deussen, is in every respect abreast of the times, except in the one point which is so deeply ingrained in the school-philosophy of to-day: it still clings to the metaphysicism of philosophy. Professor Deussen defines philosophy as being in the main "the search after the thing-in-itself." He declares that it is peculiar to philosophy to regard the object of its inquiry, which comprises the totality of all existence, as "something that *needs a further explanation*," treating it as "a problem that points *beyond itself*." He says: "While all other sciences are physical, philosophy is metaphysical." Although he denies that philosophy goes beyond experience in a transcendent way, he yet insists that "philosophy

penetrates experience in order to seize its kernel, while all physical science remains engaged with its shell. Thus all philosophy is ultimately metaphysics."

The distinction between the metaphysical kernel and the physical shell of nature was the basis of Haller's agnosticism, which Goethe so emphatically rejected by saying :

"Natur hat weder Kern noch Schale
Alles ist sie mit einem Male."

There is no harm in using allegorical expressions, such as kernel and shell, but there is a danger in building upon them philosophical theories. Nor is there any objection to the term "metaphysical," provided it be clearly defined, and all misconstruction, as though it meant something that points beyond experience, or leads behind nature, be excluded.

Prof. Deussen has also written a text-book on *The Elements of Metaphysics*, which is of interest as an elaboration of a metaphysical philosophy, which, so far as historical and philological scholarship are concerned, is thoroughly up to date. The very first page, however, shows the lack of a truly scientific spirit, so much needed in philosophy. Professor Deussen begins dogmatically with the proposition that two standpoints are possible, the empirical and the transcendental. The former, inquiring into phenomena, is "physics" in the widest sense of the word; the latter, inquiring after the thing-in-itself, is "metaphysics." In paragraphs 7 and 8 we are told that time and space are infinite. In paragraphs 8 and 10 he says: "Everything that exists necessarily exists in space, for otherwise it would be nowhere, and accordingly would not exist at all." The same argument is repeated in paragraph 10: "Everything that happens necessarily happens in time, for otherwise it would happen never, and accordingly it would not happen at all." This start is characteristic of a metaphysical philosophy.

A positive philosophy begins with a statement of facts. Facts are our data which have to be explained, but it is not easy to determine what "facts" in this sense means. The facts from which we have to start are the experiences commonly called sense-perceptions;

and upon a further inquiry, we discover that they are the elements which in the long process of evolution have built up our soul.

As to time and space, the positive philosopher does not predict their infinity, but inquires into the nature and origin of these notions. We find that both are the product of abstraction, and would say that an idea from which the notion of space is excluded represents something whose nature is independent of space. Thus there are indeed many things which exist without being either in time or space. The existence of non-spatial realities is an old *crux* in philosophy, as we know from *The Questions of King Milanda*, where Nagasema maintains and proves the positive existence of Nirvâna, although Nirvâna is neither in time nor in space. The unbeliever is refuted by a *reductio ad absurdum* and Nagasema proves that according to the logic of his adversary wisdom is a non-entity, for it is nowhere.

Space is not (as Kant has pointed out) a mysterious entity. It is not a thing-in-itself, not a metaphysical box in which existence is contained. But it is a feature of existence. Space is extension, and extension is a quality of the objective world. As extension, space represents the interrelation of things, including, if they are in motion, also all possible interrelations, viz., direction and all possible change of direction, or, in a word, the possibility of motion.

The infinity of space would be mysterious, if it were a box in which the world is contained; but it ceases to be mysterious as soon as we understand that it is the possibility of motion which in every direction is unlimited.

Time, in the same way, is not an incomprehensible monster which swallows the things that are now, and, at the same time, begets the things that will be. Time is as little a thing-in-itself as space. Time is not that which contains all the events that take place, but it is an abstract idea derived from the facts of our experience. Time is nothing but the purely formal aspect of change, considering the succession and duration of events. Time is the measure of duration, which is accomplished through the establishment of a unit of duration.

Professor Deussen assumes metaphysics in the very beginning

of his philosophy. No wonder that after a critical examination of the material under his hands he finds throughout a metaphysical residuum, casting a glamor of mysticism over his whole world-conception, which may be characterised as a modernised edition of Schopenhauer's philosophy.

PHILOSOPHY DEFINED.

But what becomes of philosophy if metaphysics is gone? Is philosophy merely (as it was to Auguste Comte) the sum-total of scientific knowledge, or has it still a province of its own?

Philosophy has, indeed, a province of its own, the limits of which are quite well defined. Philosophy is engaged with such inquiries which, according to their nature, are common to all sciences. An investigation into the constituents of water belongs to the domain of a special science called chemistry. But a consideration of the methods of science concerning the comprehension or explanation or systematisation of facts belongs to the department of philosophy. Yet, for that reason, philosophy, as we understand it, is not superscientific, but is a science among the sciences. And there are three great departments in philosophy:

First, philosophy is above all *methodology*. It has to investigate the basis of all the sciences; it has to define and explain the scientific methods which the scientist instinctively employs as tools of scientific inquiry. We need an elucidation of such ideas as causation, natural law, cognition, experience, reason, and truth.

Secondly, philosophy must be *systematology*. From the data furnished by the most matured results of the various sciences philosophy constructs, with the help of the best scientific methods accessible, a world-conception which must be at once consistent and systematic.

And, thirdly, philosophy has to apply the results of this systematised world-conception to practical life. It must be what is generally called *world-wisdom*. Philosophy must teach man his place in nature. It must enable him to strike the proper attitude in life. It must attune our souls to the harmony of the whole of which we

are a part, and advise us as to the right conduct in life. This is ethics in the broadest sense of the word.

Philosophy as here conceived may be called "the philosophy of science," because it recognises the importance of defining philosophy as the science of science, and insists that its methods and modes of operation are in principle not different from the other sciences. Philosophical cognition is essentially the same as scientific cognition.

THE MONISTIC CONCEPTION OUTLINED.

Having gone over the ground of the most important objections that can be made to the proposition of conceiving the nature of knowledge as description, we shall now give a brief *résumé* of the function of cognition in its various stages. It is not our intention to give exhaustive proofs and arguments, but to present the subject in a dogmatic way, so as to make its presentation concise, and to indicate in great outlines the far-reaching importance of this theory.

The world around us appears to our senses as matter moving in space, but the world in us, our soul, consists of feelings or states of awareness which rise from sensations of all kinds to the higher spheres of ideas and abstract thought, arousing in us impulses and volitions of all degrees of intensity and conscious lucidity. Anything perceived in the outside world of matter moving in space is called "object," the inside world of feelings is called "subject," and we observe at once that our own being appears in our own perception as a part of the objective world. We are soul, but we appear to ourselves and to other sentient beings as a body moving about in space.

The channels of our notions concerning the world of objects are our senses, and comparative physiology teaches that they have developed by a gradual adaptation of an undifferentiated sentience to the various actions by which the skin of organised beings is affected. The various contacts produce various disturbances in sentient matter and each kind of disturbance in the objective body, if strong enough to become conscious, is subjectively felt as an analo-

gous kind of feeling. Here the theory suggests itself that each form of objectivity is endowed with an analogous subjectivity, so that all the bodies of the same or a similar shape with ourselves, acting according to the same or similar principles, are possessed of the same or similar souls. The evidence of this monistic conception is so overwhelming that in practical life all living beings accept the theory unconsciously and endow all bodies which in their actions exhibit purpose with sentient souls according to their various organisations. However, we cannot without falling into inconsistency escape the conclusion that other objective existences too, those which appear inert and which by scientists are classified under the head of inorganic nature, possess their exact subjective equivalent, for the material of the soul-endowed world of organised life is the same as that of the inorganic world, the latter is the inexhaustible reservoir for the sustenance of the former, and we have good reasons to believe that the former spontaneously under still unknown conditions develops from the latter. The lowest kind of subjectivity which must be supposed to be present in the gravitating stone or in the chemical action of the elements is, so far as we can judge, not sentient, but it contains in an unorganised state the elements of sentiency; inorganic nature does not feel, but it is endowed with the potentiality of feeling.

We conceive the world as an immeasurably great system of interactions, and say that every action is subjectively a feeling or an element of feeling and objectively a motion. An idea which I think is subjectively a state of awareness and objectively a brain-motion. The feeling and the motion are two aspects of one and the same fact.

Wherever existence has developed into a sentient organism, every impression which is felt as a peculiar sensation leaves a trace, the form of which is preserved in the flux of organised life; and when another impression of the same kind creates another correspondent sensation, it is transmitted to the memory trace of its predecessor which is thereby revived and is felt to be the same. Thus this feeling naturally comes to indicate the presence of the same object whatever it be and sensations naturally develop into

symbols or signs representing the object of contact and processes that take place in the objective world.

Sensations are the basis of all knowledge ; they picture our surroundings in the feelings which the various objects in various ways, according to their nature, rouse by their contact with the sentient organism. Sensations are not the things pictured in them, nor do they inform us of the nature of things-in-themselves, they only represent the things so as to show which is which. Representativeness is the characteristic feature of the soul and it is the root from which cognition grows.

The simplest kind of cognition is perception ; it is the picturing of objects in their analogous forms of feeling, so that their sameness or the similarity of a new sensation with former sensations is perceived, or, as we correctly say, re-cognised.

Cognition in its primitive form is a reference of the new sensation to an old one, into whose memory-trace it fits ; it is the reduction of the unknown to the known ; a subsumption of the unfamiliar under a class of former experiences which are familiar.

Explanation is a more complex kind of description. It is a making plain, so that the changes of a process*can be traced in all their details.¹

Natural science has found it convenient of late to express the causal law as a preservation of matter and energy. The law of the preservation of matter and energy is, closely considered and in spite of its formulation in a positive assertion, a negative statement : it means that matter and energy are neither increased nor diminished ; and its positive counter-formula would be : "all change is purely change of form ; it is not a change of the innermost nature of reality ; or, briefly, causation is transformation." The terms, "matter" and "energy," are abstractions which denote two general qualities, the identity of which can be traced in the various transformations of all phenomena ; they represent the universal features of that which is real, not entities, not substances in the

¹ There are two views as to the nature of explanation which we may call the metaphysical and the scientific, or the dualistic and the monistic views. Compare the chapter on Explanation in *The Monist*, Vol. III, No. 4, p. 585 et seq.

sense of independent existences, not things-in-themselves. We have to add that matter in this connexion is intended to mean mass, for the law of the preservation of matter does not preclude the production of matter from ether by condensation, or any other procreation of the material universe from ether, or perhaps even of ether from a more rarified world-substance—in brief, of sense-perceptible reality from what we might call potential reality.

A formulation of two or several phenomena, so as to exhibit their essential identity, showing that their difference is due to a difference of form, resulting according to the forming factors of different conditions conformably to the universal laws of form, is called comprehension; and the most important advantage of comprehension is the simplicity which in this way explanations or systematic descriptions acquire.¹

PROFESSOR MACH'S ANTI-MECHANICALISM IN PHYSICS.

We have often taken occasion to express our great admiration of Professor Mach, and we have quoted him as one of the best authorities who accept the definition of knowledge as "description," in full consciousness of its sweeping importance, not only for science, but also for philosophy. But there is one point on which we cannot agree with Professor Mach's conception of cognition. He regards the mechanical aspect (the change of form) not as we do, as one of the universal aspects of reality, but as one abstraction of reality among many other abstractions, and he considers it as perfectly equivalent with such notions as electricity or chemical affinity. He regards the reduction of all physical processes to motions as a chimerical ideal, and declares: "It is simply an accident of history that the development of the principle of energy in physics was not connected with the practical applications of electricity." He says in his article "On the Principle of the Conservation of Energy" (*Popular Scientific Lectures*, p. 151):

"Mechanical events as simple motions in space and time best admit of observation and pursuit by the help of our highly organised senses. We reproduce me-

¹Ernst Mach speaks in this sense of the economy of thought.

chanical processes almost without effort in our imagination. Pressure as a circumstance that produces motion is very familiar to us from daily experience. All changes which the individual personally produces in his environment or humanity brings about by means of the arts in the world, are affected through the instrumentality of *motions*. Almost of necessity, therefore, motion appears to us as the most important physical factor. Moreover, mechanical properties may be discovered in all physical events. The sounding bell trembles, the heated body expands, the electrified body attracts other bodies. Why, therefore, should we not attempt to grasp all events under their mechanical aspect, since that is so easily apprehended and most accessible to observation and measurement? In fact, no objection *is* to be made to the attempt to elucidate the properties of physical events by mechanical *analogies*.

"Granted that we had a perfect knowledge of the mechanical processes of nature, could we and should we, for that reason, *put out of the world* all other processes that we do not understand? On this principle it would be really the simplest course to deny the existence of the whole world."

The fact is that of molar motion we have a visual image, but our ideas concerning electricity and combinations by chemical affinity are mysterious, and their actions remain unintelligible until we can explain them by analogous events in molar mechanics. It is no accident but a matter of necessity that we cannot help trying to understand all phenomena as transformations, or changes of place; and if we are unwilling to consider this state of things as due to the nature of objective existence, we should have to say, such is the constitution of sentient beings, and especially of the thinking subject which has acquired the faculty of reason, that it must explain changes as motions which produce new constellations.

In our opinion the mechanical aspect is a more general feature of reality than electrical and chemical phenomena, all of which belong to the same category of objective nature. The attempts of physicists to understand the latter as a species of the former by considering them as molecular mechanics is no accident, but the necessary outcome of the natural relation that obtains among these abstractions. That class of phenomena to which our sensory organs are, as it were, adapted so as to show them in the focus of our direct observation naturally appear as molar motions and we cannot help thinking that such more subtle changes in nature, as for instance chemical combinations, are of the same character, only on a smaller scale.

If atoms were rational beings, molecular mechanics would be to them such changes of place as we call molar motions, for the sensorium of atoms would be so adjusted that the changes that take place in the molecules would be in the field of their direct observation. Our molar motion would be to them, what the cosmical motions of the stars are to us: they would not be directly observable and any knowledge of them could only be inferred by a complex process of reasoning.

We do not regard it as purely accidental that mechanical laws are more satisfactory explanations than formulas of electrical or chemical actions. The latter are mere names of unexplained processes; and they will remain mysterious to us until we understand how the various particles of matter move about according to purely formal laws.

If Professor Mach does not follow us it is partly the scientist's punctilious anxiety not to leave the *terra firma* of facts, partly perhaps because he does not emphasise, as we do, the radical difference between the formal and the purely sensory elements in experience. He makes the statement that science results in an economy of thought as a matter of fact and does not attempt to explain how economy of thought is possible. We find that the universality of the formal law is the reason why a recognition of it naturally results in an economy of thought. From our standpoint the law of the conservation of energy is an empirical formulation of the philosophical statement "all causation is transformation." We may add that whether or not Professor Mach would be willing to follow us, our view does not stand in contradiction to his but can be conceived as a wider application of it and a further corroboration of its main principles.

The ultimate aim of comprehension is to reduce all difference to a variety of form and thus to describe reality in terms of formal sciences. Hence the importance of measuring and numbering; of graphic formulas or any other conceptions of tridimensional relations. All phenomena in the world would be explained if their differences could be understood as due to a difference of form, while the innermost nature of reality is conceived as the same throughout.

THE METAPHYSICAL *x* NOT UNKNOWN.

There is no serious objection to regarding all scientific cognition, knowledge, explanation, and comprehension, as description or representation of facts in mental symbols. But we have stated ourselves that explanations can be satisfactory only when the descriptions of phenomena are reduced to terms of form, while the innermost nature of reality is supposed to be and to remain the same all through. Is not what we here call "the innermost nature of reality" the surd, which lies without the pale of science, and whether or not we call it metaphysical, will always remain unexplained?

No, it does not remain unexplained, for it is the very material on which and with which our cognition is written; it is the best-known reality and most familiar of all facts, for it is the innermost nature of our own being. It is both the slate and the slate-pencil, which in their interaction produce those writings which we call the soul.

We must bear in mind that monism teaches the inseparableness of subject and object, and the innermost nature of that which appears to you my body is what I call "my soul"; while the subjectivity, which varies with the forms which it ensouls, is an intrinsic feature of all objectivity, and there is, according to our best scientific notion, no particle of the ultimate substance of which the world consists, which could not, as well as any other particle, in the course of its migration, have become an essential ingredient of the thinking brain.

Schopenhauer was perfectly aware of this fundamental doctrine of monism, but he makes no good use of it. Schopenhauer says:

"The source of the knowledge of metaphysics is not *outer* experience alone, but also *inner*. Indeed, this is most peculiar to it, and hereby the decisive step which alone can solve the great question becomes possible . . . that at the right place it combines outer experience with inner, and uses the latter as a key to the former."

Schopenhauer solves the metaphysical problem as to what is

the innermost nature of things by saying, it is the same as the innermost nature of ourselves, viz., the will, using the term "will" in a peculiar sense; and the trend of his solution is correct.

This procedure practically identifies the metaphysical with the subjectivity of existence, and we accept it without hesitation; but in doing so we bear in mind that we do not enter here into a domain from which science is debarred. An investigation of the subjective nature of ourselves and other sentient beings is commonly called psychology and not metaphysics, and the methods of psychology are the same as the methods of any other science. Explanations are as much descriptions in psychology as in physics; there is only this difference, that what Schopenhauer calls metaphysics is, as it were, generalised psychology. We attribute to other beings, according to their form, subjectivities analogous to those which our own bodies possess. Now, suppose we call such a generalised psychology by the traditional term "metaphysics," and the innermost nature of reality "things-in-themselves," we should most certainly not be justified in saying that our cognition invariably leads us to an x , that we always arrive at an unknown quantity, concerning the nature of which we cannot have the faintest idea or comprehension.

The method of monism is to interpret the facts of objective experience in the terms of our subjective nature; and to interpret the phenomenal universe as analogous to our body. All reality appears to sentient beings as matter moving in space, but it is in itself either soul, or where it is not actual soul, potential soul, viz., that subjectivity which, as soon as it is organised, becomes soul according to its form.

The science of a generalised psychology or metaphysics would have to explain how the ultimate constituents of man's soul are the same as the subjectivity of a burning flame or of a falling stone. It would have to explain how the subjectivity, plain and simple as it appears in inorganic nature, builds up a higher life in organised animal nature, where it becomes feeling, and how feeling becomes mind by being representative of the various objective conditions which produce a variety of feeling.

Schopenhauer says (*ibid.*, p. 202):

"How can a science that is derived from experience lead beyond experience, and thus deserve the name of metaphysics? It can *not* do so in the same way as, according to the rule of three, the fourth number, or as from two sides and an angle the third side of a triangle is found. . . . The whole of experience is like a cryptography, and philosophy is its explanation, the correctness of which is proved by the sense that appears in the context. If the whole is only understood in its full depth and connected with inner and outer experience, it must be possible to be interpreted and explained out of itself."

If metaphysics denotes "that which ventures beyond experience" (this is Schopenhauer's definition), we deny the existence of metaphysics, for our subjectivity is as Schopenhauer himself says, inner experience. Our soul is the metaphysical essence of our bodily being, and what is better known to us than our own existence? Neither is the object of metaphysics, viz., the so-called thing-in-itself, or the innermost nature of being, i. e., the subjectivity of existence, anything that lies beyond or behind nature and outside of the range of science. On the contrary, it is the heart of nature, its essence or the inner nature of nature. The metaphysical, accordingly, is so far from being outside of experience that it is the very cornerstone of the possibility of experience. It does not lie beyond the limits of our cognition of nature¹ and involves us in no *ignorabimus*. It does not

¹ Du Bois-Reymond speaks of the *Grenzen des Naturerkennens*.

Du Bois-Reymond's proposition, that "if only one single brain-atom could be moved by thought one-millionth fraction of a millimetre from the path prescribed by the laws of mechanics, the whole world-formula would cease to have meaning," is quite true, if by thought is understood the mere subjectivity of thought, while the objectivity is considered as operating without our taking reference to its subjectivity. But we must not forget that there are no thoughts which are not at the same time brain-motions; and there is no question about it that while a man thinks the atoms of his brain do move; and these brain-motions, small though they are, are of enormous consequence, for they, being the exponents of conscious aims, bring purpose into the world of physical causation, which renders "the world-formula" such as a physicist may propound by confining his attention to mechanics alone, but is immeasurably more complex, without annulling it. Du Bois-Reymond's proposition is misleading, because the word "thought" is an abstraction, and there are as little ideas which are not at the same time motions, as there is gravity outside of mass. He might as well have said: "Gravity exercises no influence in the world which is strictly governed by mechanical law. If one single dust-particle could be moved by gravity one-millionth fraction of a millimetre from the path prescribed by the laws of mechanics, the whole world-formula would cease to have a meaning." And the same proposition can be varied *ad libitum*. In the same sense, "chemical affinity" can-

commit us to a belief in anything intrinsically unknowable, which is always the confession of a philosophical insolvency. It is so far from being foreign, unknown, or incomprehensible to us that it forms the very essence of our own existence. For this same reason Goethe objects to the idea of the inaccessibility of Nature's interior. He says :

"Schritt für Schritt
Sind wir im Innern."

The method, however, by which we arrive at the conclusion that the inner nature of other things is analogous to our own inner nature is exactly the same rule of three which Schopenhauer regards as insufficient. He himself applies it unconsciously, while Clifford gives precision to Schopenhauer's solution of the problem by saying :

"As the physical configuration of my cerebral image of the object
"Is to the physical configuration of the object,
"So is my perception of the object (the object regarded as complex of my feelings)
"To the thing-in-itself."

In other words :

As the brain-structure (which is matter in motion) is to its analogous idea, so the object is to the innermost nature of the object. Or as cerebral activity is to my soul, so the material object (the phenomenon) is to the soul of the object as the object is in itself.

This conception, which is a consistent monism, recognises the spirituality of all existence, but it excludes the possibility of ghosts. Ghosts are bodiless souls, and souls, wherever they exist in reality, will, by the very fact of their existence, appear as material bodies to other sentient beings, and must originate, act, and evolve according to the mechanical laws of change. They cannot be conjured by magicians from the vast inane, but must develop in nature according to the laws of nature. On the other hand, the laws of nature do not give us an account only of purely material phenomena ; by revealing

not move a single atom, and if it could, the laws of mechanics would be meaningless.—(Compare *The Monist*, Vol. III, No. 4, pp. 612-615, where this subject is discussed in detail.)

the laws of the physical exterior we can decipher the spiritual (the subjective, or, if you please, metaphysical) interior of the various objects that people the world around us.

CONCLUSION.

A clear conception of the nature of knowledge, is one of the most indispensable requisites of a sound world-conception; for knowledge—using the word in a broad sense—is the nature of mind. It is the characteristic attribute of the soul of man. If we understand what knowledge is, we know the nature of our own mentality, and what can be of greater importance to us than the fulfilment of the old injunction *ΓΝΩΘΙ ΣΕΑΥΤΟΝ!* Know thyself!

The importance of a comprehension of the innermost nature of being (which we call subjectivity) is greatly exaggerated. It is frequently regarded as the object of metaphysics, and according to a fashionable mysticism claimed to be incomprehensible. If this metaphysical centre of being could be known, so the argument commonly runs, we should have the key to all the riddles of the universe. Its comprehension is regarded as a kind of philosopher's stone, and if a scientist could find the value of this *x*, he would be in possession of the solution of all problems. This is a great error. A misconception of that feature of existence which in living substance becomes feeling and in man blazes forth as consciousness, will throw all thought into confusion, but a right conception of it does not involve the advantage that in the future we can dispense with the drudgery of scientific investigation, as though the acquisition of further knowledge had become redundant. Faust's hope of opening channels of wisdom by magic is a mistake. The world-problem does not lie in what Schopenhauer calls the metaphysical, but it reveals itself in objective nature. There it must be sought and there alone it can be found. He who does not find the correct solution should find fault not with reality, but with himself. The world is not unintelligible, but the man who is unable to decipher its wonderful cryptography is unintelligent. Faust is quite conscious of the fact that his inability to acquire genuine knowledge is his own fault. He says:

"The spirit world no closures fasten ;
 Thy sense is shut, thy heart is dead.
 Disciple up ! Untiring hasten
 To bathe thy breast in morning-red."

["Die Geisterwelt ist nicht verschlossen :
 Dein Sinn ist zu, dein Herz ist todt.
 Auf, bade, Schüler, unverdrossen
 Die ird'sche Brust im Morgenroth."]

The elements of subjectivity, being, as it were, the substance out of which the soul has been fashioned, are the same in man as in the dust that is trodden under foot. And Christ's words are literally true when he says: "God is able of these stones to raise up children unto Abraham."

The metaphysical nucleus of reality, the in-itselfness of things and of ourselves does not contain the key to any problem either of science or philosophy. The identity which we must attribute to its nature in all its elementary forms, renders it unimportant as a factor in explanation. The diversity, however, which it exhibits in its various combinations, now as phenomena of inorganic nature ; now again as the irritability of a plant, and here in us as the soul of a rational being, depends upon the forms which it assumes, and these forms become tangible, visible, and observable in the objective world. The parallelism of subjectivity and objectivity teaches us that the things-in-themselves of objects are as much combinations of the elements of the metaphysical essence of all reality, as the objects under our observation appear to our senses as combinations of material elements.

* * *

Summa summarum : The source of knowledge is inner as well as outer experience, observation as well as introspection, but metaphysics is of no avail. Metaphysical philosophies must give way to the only true philosophy—which is the philosophy of science.

The peculiar nature and the worth of man lies not in what metaphysicians call the thing-in-itself,—granting here the propriety of the term,—it lies not in the presence of any metaphysical essence, not in the subjectivity of his existence, but in the truth of the im-

ages and ideas of which his soul consists. Man's soul is a description of reality *sub specie aeterni*; it is an image of God. God enters, as it were, in parts with every sense-impression into sentient creatures, and his likeness grows in clearness as the traces thus produced in living feelings reconstruct the World-Logos, which in man's soul appears as the divine spark called Reason. The progress of man's comprehension of natural phenomena, revealing the cosmic order of the universe and teaching the right conduct in life, is the history of God's revelation.

EDITOR.